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eight perpetual kilns. It has been found necessary, in order to make the cement satisfactory, to bring rock from Milford, Kansas, and mix with the rock obtained near the works. Very little has been manufactured at these works during this year.

The cost per barrel at Lawrence of the three cements tested is: Kansas City, $1.65; Fort Scott, $1.65; and Portland $4.50.

## NOTE ON THE OVIPOSITION OF A WOOD-BORER.

BY PROF. E. A. POPENOE, STATE AGRICULTURAL COLLEGE, MANHATTAN.

The beautiful beetle known to the entomologist as *Tragidion fulvipenne* is not common enough to have received a vernacular name, and at no time have we had a surplus stock of specimens in our collections. Being on the watch for facts in its life history, I observed with interest that in the warm days about the end of September, my wood-pile was the center of attraction to a number of these beetles. Noting that all the individuals were females, and that, though at first seen only flying, they presently alighted with evidence of an earnest purpose, I watched them more attentively. They seemed to be attracted specially to the smooth sticks of round wood, of a species of oak, without much doubt the chestnut oak, as this is the only smooth-barked oak abundant in the vicinity of Manhattan. Over these sticks they crawled, paying little regard to my presence, their bodies close to the wood, their sensitive antennæ carried forward and constantly vibrating, as they investigated apparently every inch of the surface. The evident object of their search was suitable spaces for the deposit of their eggs, and though I watched with some care during my noon-hour for several days, I did not succeed in observing the beginning act in oviposition. I was fortunate enough to see two females that had not completed their work, however, and so was able to discover the eggs, which I might otherwise have failed to find at all. When detected in oviposition, the females were standing on the smooth bark, transversely to the stick, their bodies close to the surface, their antennæ bent under at the tips, which were touching the bark, and the broad tip of the abdomen closely appressed to the surface over which the insect stood. The close contact of the motionless tip of the abdomen to the bark, prevented my noting the exact mode of placing the egg, and presently, becoming somewhat impatient, I lifted a beetle from position; and, to my surprise, instead of an opening in the bark as I had anticipated, I saw a tubercle simulating so closely in appearance and color the corky outgrowths common on the bark of the chestnut oak, that I was at first inclined to believe it one of these, and to question the purpose of the female in maintaining so long the position described. On an examination of this tubercle, however, I found it to be hollow, and within it, lying on the bark, with no puncture or abrasion in the latter to be seen, was an oblong egg of a translucent, dull white surface, smooth and without markings so far as I could see with a pocket-triplet of good definition. This egg was sufficient in size nearly to fill the hollow tubercle, or egg-case, as I may now call it. The egg-case is rather regular, elliptical, strongly convex, measuring about one-sixteenth of an inch in length. Under the microscope the case appears on the surface to be made up of scales of the thin external layer of the oak bark, intermingled with glistening particles, as of dried mucus. The case is at this date unchanged, and no sign of the hatching of the egg is yet visible. I have been unable to find the record of similar habits in oviposition in any of the *Cerambycidæ*. Commonly the eggs are either laid under scales or in cracks in the bark, as with most of the wood-borers, or in a rough fissure made by the insect herself for the purpose. I have found no reference to the oviposition of the species of *Elaphidion*, our common allies of *Tragidion*.

The beetle in question is attracted to some coarse flowers, as the *Silphium perfoliatum*, or is destructive to ripe fruit, as peaches, by gouging into the tender fruit, the juices of which are a favorite food. I have also observed them eating the flesh of a ripe watermelon in company with other fruit-boring insects, the cetonians, wasps, and flies.

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# A STUDY OF THE ALBUMINOIDS.

BY PROF. L. E. SAYRE, STATE UNIVERSITY.

[*Abstract.*]

For several years past various attempts have been made to concentrate and bring to a convenient form for administration as remedial agents the digestive principles contained in the gastric juice and pancreatic fluid. While the efforts in this direction have thrown much light upon the nature of these principles, their exact constitution has not been studied, for the reason that no one seems to have as yet accomplished the difficult task of isolating them.

The two processes adopted by pharmacists at the present time for the purpose of making medicinal pepsin are about as follows: One is known as Scheffer's process, by which the pepsin is dissolved out of the mucous lining, along with other albuminous substances by means of slightly acidulated water. The resulting liquid is treated with chloride of sodium, which causes a light, flocculent precipitation of these substances. The precipitate, collected, washed, and dried, constitutes this form of pepsin, which appears in the market in the form of a light-brown powder. More usually it comes as saccharated pepsin; this is a white powder composed of the above so-called pure pepsin and a liberal quantity of sugar of milk. It is slightly soluble in water. The kind of pepsin known as crystal, flake or scale pepsin is quite a different article in appearance and composition. It is composed largely of peptone holding in its substance a good deal of peptic power. In preparing it advantage is taken of the peculiar influence which heat exercises, in the presence of acidulated water, over the mucous lining of the stomach. The finely-chopped mucous membrane is digested in a very mildly-acidulated aqueous solution at a temperature of 38° C. until the whole is obtained in a viscid solution. This is filtered, neutralized, and evaporated at a temperature not over 40° C., until a thin, transparent scale is formed. This product comes in market in yellowish, transparent laminæ, very soluble in water. It also appears in the form of a white powder in the saccharated form.

The process of manufacture of pancreatin upon a large scale for the market has been kept pretty closely as a trade secret. It appears in the market in the form of a yellowish-brown powder, almost entirely soluble in water, and of a disagreeable odor. It has the special property of digesting albuminous substances in an alkaline solution. Pepsin will accomplish this only in acid solutions. Its application as a medicinal agent is especially valuable in certain forms of infantile digestion and certain depressed conditions of the digestive functions in adults, where a milk diet is indicated. Pancreatin is used in these cases to dissolve (digest) the caseine of the milk. The predigested milk becomes a very nutritious substance, and is easily assimilated by a very feeble stomach.

The method I have used for the purpose of preparing pancreatin is in substance as follows: The finely-chopped pancreas is macerated for twenty-four hours in a mixture of equal parts of glycerine and water, using one fluid ounce of the mixture